

## AMENDMENTS TO THE CLAIMS

Please amend claims 23, 24, 31, 32 and 35 as follows.

1-22. (Canceled)

23. (Currently Amended) A coherent light source, comprising:

a wide stripe semiconductor laser capable of exciting a plurality of lateral modes;

a mode converter for beam shaping therein, light emitted from the semiconductor laser  
and for controlling the lateral modes;

a single-mode waveguide to which the light from the semiconductor laser is coupled  
through the mode converter; and

a wavelength selecting filter through which the light exiting an end face of the single-mode waveguide passes, and through which a portion of the light transmitted by the single-mode waveguide simultaneously undergoes wavelength selection and mode selection and is fed back to an active layer of the semiconductor laser using a same exit path,

wherein an oscillation mode of the semiconductor laser is limited by the light that has been fed back, so that the semiconductor laser oscillates in a generally single longitudinal mode and a generally single lateral mode, [[and]]

wherein the portion of the light coupled to the single-mode waveguide is also reflected at the end face of the single-mode waveguide, and fed back to the active layer of the semiconductor laser, and

wherein an oscillation wavelength of the semiconductor laser is fixed such that  $(n_2 - n_1)/n_1$  is between 0.2% and 0.5% inclusive,  $n_1$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda$  and  $n_2$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda/2$ .

24. (Currently Amended) A coherent light source, comprising:

a wide stripe semiconductor laser ~~capable of exciting a plurality of lateral modes;~~

a mode converter for beam shaping ~~therein~~, light emitted from the semiconductor laser and for controlling the lateral modes;

a single-mode waveguide to which the light from the semiconductor laser is coupled through the mode converter; and

a wavelength selecting filter through which ~~the light exiting an end face of the single-mode waveguide passes, and through which~~ a portion of the light transmitted by the single-mode waveguide is fed back to an active layer of the semiconductor laser and simultaneously undergoes wavelength selection and mode selection ~~using a same exit path,~~

wherein an oscillation mode of the semiconductor laser is limited by the light that has been fed back, ~~so that the semiconductor laser oscillates in a generally single longitudinal mode and a generally single lateral mode, and~~

wherein the wavelength selecting filter includes a band pass filter and a reflector, and the light that has been transmitted by the single-mode waveguide passes through the band pass filter, and then the portion of the light that has been fed back through the wavelength selecting filter is reflected by the reflector and fed back to the active layer of the semiconductor laser, and

wherein an oscillation wavelength of the semiconductor laser is fixed such that  $(n_2 - n_1)/n_1$  is between 0.2% and 0.5% inclusive,  $n_1$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda$  and  $n_2$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda/2$ .

25. (Previously Presented) The coherent light source according to Claim 24, wherein the band pass filter and the reflector are formed integrally with the single-mode waveguide as a Bragg reflection grating.

26. (Previously Presented) The coherent light source according to Claim 23, wherein the wavelength selecting filter is a volume grating.

27. (Previously Presented) The coherent light source according to Claim 23, wherein the wavelength selecting filter is a fiber grating.

28. (Previously Presented) The coherent light source according to Claim 23, wherein the wavelength selecting filter is formed integrally with the semiconductor laser as a Bragg reflection grating.

29. (Previously Presented) The coherent light source according to Claim 23, wherein the mode converter is a tapered waveguide.

30. (Previously Presented) The coherent light source according to Claim 23, wherein the mode converter is a tapered fiber.

31. (Currently Amended) A coherent light source, comprising:

a wide stripe semiconductor laser ~~capable of exciting a plurality of lateral modes;~~

a mode converter for beam shaping light emitted from the semiconductor laser and for controlling the lateral modes;

a single-mode waveguide to which the light exiting from the semiconductor laser is coupled, ~~and having a periodic polarization inversion structure through the mode converter;~~ and

a wavelength selecting filter through which ~~the light exiting an end face of the single-mode waveguide passes, and through which~~ a portion of the light transmitted by the single-mode waveguide is fed back to an active layer of the semiconductor laser and simultaneously undergoes wavelength selection and mode selection using a same exit path,

wherein ~~the~~ an oscillation mode of the semiconductor laser is limited by the light that has been fed back, ~~so that the semiconductor laser oscillates in a generally single longitudinal mode and a generally single lateral mode, and~~

wherein ~~the portion of the light that passes from the semiconductor laser through the single-mode waveguide is subjected to wavelength conversion by the~~ has a polarization inversion structure,

wherein the portion of the light from the semiconductor laser is subjected to wavelength conversion by the polarization inversion structure, and

wherein an oscillation wavelength of the semiconductor laser is fixed such that  $(n_2 - n_1)/n_1$  is between 0.2% and 0.5% inclusive,  $n_1$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda$  and  $n_2$  being a refractive index of the wavelength selecting filter with respect to light with a wavelength  $\lambda/2$ .

32. (Currently Amended) A coherent light source, comprising:

a wide stripe semiconductor laser capable of exciting a plurality of lateral modes;

a tapered waveguide having an incident end face to which light exiting from the semiconductor laser is coupled;

a single-mode waveguide formed on the end face of the tapered waveguide;

a band pass filter through which a portion of the light transmitted by the single-mode waveguide passes; and

a reflector that reflects the light transmitted through the band pass filter and feeds the portion of the light back to an active layer of the semiconductor laser using a same exit path,

wherein the oscillation mode of the semiconductor laser is limited by the light that has been fed back, so that the semiconductor laser oscillates in a generally single longitudinal mode and a generally single lateral mode, and

wherein an oscillation wavelength of the semiconductor laser is fixed such that  $(n_2' - n_1)/n_1$  is between 0.2% and 0.5% inclusive,  $n_1$  being a refractive index of the band pass filter with respect to light with a wavelength  $\lambda$  and  $n_2'$  being a refractive index of the band pass filter with respect to light with a wavelength  $\lambda/2$ .

33. (Previously presented) The coherent light source according to Claim 32, wherein the band pass filter is formed integrally with the single-mode waveguide as a Bragg reflection grating.

34. (Previously Presented) The coherent light source according to Claim 32, wherein the single-mode waveguide is composed of a nonlinear optical material and has a periodic polarization inversion structure, and

a portion of the light from the semiconductor laser is subjected to wavelength conversion by the polarization inversion structure.

35. (Currently Amended) A coherent light source, comprising:

a wide stripe semiconductor laser capable of exciting a plurality of lateral modes, including a Bragg reflection grating;

a tapered waveguide having an incident end face to which light exiting from the semiconductor laser is coupled;

a single-mode waveguide formed on the end face of the tapered waveguide; and

a reflector that reflects a portion of the light transmitted from the single-mode waveguide and feeds the portion of the light back to an active layer of the semiconductor laser using a same exit path,

wherein the oscillation mode of the semiconductor laser is limited by the light that has been fed back, so that the semiconductor laser oscillates in a generally single longitudinal mode and a generally single lateral mode, and

wherein an oscillation wavelength of the semiconductor laser is fixed such that  $(n_2 - n_1)/n_1$  is between 0.2% and 0.5% inclusive,  $n_1$  being a refractive index of the Bragg reflection grating with respect to light with a wavelength  $\lambda$  and  $n_2$  being a refractive index of the Bragg reflection grating with respect to light with a wavelength  $\lambda/2$ .

36. (Previously Presented) The coherent light source according to Claim 35, wherein the single-mode waveguide is composed of a nonlinear optical material and has a periodic polarization inversion structure, and

a portion of the light from the semiconductor laser is subjected to wavelength conversion by the polarization inversion structure.

37. (Previously Presented) The coherent light source according to Claim 35, wherein the exit end face of the single-mode waveguide has a dichroic mirror that transmits fundamental waves and transmits higher harmonic waves.

38. (Previously Presented) The coherent light source according to Claim 23, wherein the lateral mode of the semiconductor laser is substantially fixed to single-mode oscillation by feedback light.

39. (Previously Presented) An optical device, having an image conversion optical system and the coherent light source according to Claim 23, wherein the light from the coherent light source is converted by the optical system into a two-dimensional image.

40. (Previously Presented) The optical device according to Claim 39, wherein the image conversion optical system has a two-dimensional beam scanning optical system.

41. (Previously Presented) The optical device according to Claim 39, wherein the image conversion optical system has a two-dimensional switch.

42. (Previously Presented) The coherent light source according to Claim 35, wherein the lateral mode of the semiconductor laser is substantially fixed to single-mode oscillation by feedback light.

43. (Previously Presented) An optical device, having an image conversion optical system and the coherent light source according to Claim 35, wherein the light from the coherent light source is converted by the optical system into a two-dimensional image.

44. (Previously Presented) The optical device according to Claim 43, wherein the image conversion optical system has a two-dimensional beam scanning optical system.

45. (Previously Presented) The optical device according to Claim 43, wherein the image conversion optical system has a two-dimensional switch.



46. (Previously Presented) The coherent light source according to Claim 32, wherein the lateral mode of the semiconductor laser is substantially fixed to single-mode oscillation by feedback light.
47. (Previously Presented) An optical device, having an image conversion optical system and the coherent light source according to Claim 32, wherein the light from the coherent light source is converted by the optical system into a two-dimensional image.
48. (Previously Presented) The optical device according to Claim 47, wherein the image conversion optical system has a two-dimensional beam scanning optical system.
49. (Previously Presented) The optical device according to Claim 47, wherein the image conversion optical system has a two-dimensional switch.